

Solid Waste Management Privatization Procedural Manual

Solid Waste Management Planning



Solid Waste Technical Assistance



Ministry of
State for
Environmental Affairs



Egyptian
Environmental
Policy Program

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INTRODUCTION



of the Solid Waste Privatization Procedural vides a step-by-step analyzing existing solid gement services and developing and evaluating alternative plans for future solid waste management services. The end product will be a new Solid Waste Management Plan (or plans) for providing solid waste management services within the geographic area of concern (Service Area).

Completion of the steps outlined in this chapter also will provide the information needed to perform financial feasibility analyses of the existing and planned solid waste management service systems as described in Chapter 3.

WHAT IS SOLID WASTE PLANNING?

Solid waste planning is a tool that provides Governorates with the ability to thoroughly evaluate and understand their current waste management system, as well as options for new waste management systems. It is a general mechanism by which an integrated waste management program can be implemented that best meets local needs.

In the solid waste planning process, planners and decision-makers at the

Governorates should become familiar with the key aspects of solid waste management and the local system including the following:

- The legal, regulatory, and policy environment.
- Demographic and land use considerations.
- Existing solid waste practices.
- Existing and projected waste stream composition and quantities.
- Assessment of needs from the planner's perspective (i.e., public health, environmental protection, etc.).
- Assessment of needs from the public (ratepayers) perspective (i.e., convenience, abatement of litter and accumulated waste, etc.).
- Waste collection, processing, recycling, treatment, and disposal options.
- Waste facility-siting options.
- Public awareness and communications programs.
- Management, contractual reporting, and record-keeping issues.
- Implementation and on-going contract management issues.

The Governorates should be able to implement positive change to their solid waste management systems by following the recommended action steps highlighted in this manual.

Why should we be concerned with solid waste planning? To improve the effectiveness and efficiency of the solid waste management system in the most cost effective manner. As it has been said: "Those who fail to plan, plan to fail".



Waste management planning is an iterative process. During planning several waste service alternatives may be developed and assessed. These alternative service plans will include sufficient detailed information to prepare estimates of projected costs for each alternative under study. They also will include the basic information necessary to make preliminary estimates of the fees and service charges needed to support the preferred level of service, and to assess the desirability of privatization, all in accordance with the procedures set forth in Chapter 3.

In some cases, the information developed during the analysis may cause those involved in the process to re-think their desired goals and outcomes. In other cases, desired alternatives may prove too costly or difficult to implement, in which case a return to the earlier steps in the planning process to select a different plan may be warranted. Service Areas may change. The desired types or levels of waste management service may change.

It should be understood that these types of situations are not bad: in order to

have a better waste management system, you must take into account many variables, some of which are unknown until the analysis is undertaken. Ultimately waste management planning is an on-going process rather than a single action or decision. Yet even without perfect knowledge, decisions must be made to manage the relentless flow of solid waste.

The solid waste planning process can be conducted in eight steps.

Step 1: Form the Planning Team.

Step 2: Review the Legal, Regulatory, and Policy Framework.

Step 3: Establish Planning Framework and Service Goals.

Step 4: Evaluate the Existing Solid Waste Management System.

Step 5: Develop Waste Management Service Alternatives.

Step 6: Develop Service Delivery Options.

Step 7: Select the Desired Service Delivery Plan.

Step 8: Prepare the Solid Waste Management Plan.

STEP 1:

FORM THE PLANNING TEAM

The first step in the solid waste management planning process is to form the Planning Team. A list of the various roles of the Planning Team follows:

- Evaluate where new waste management services are needed (the "Service Area") and define the Service Area boundaries.
- Gather information on the types and quantities of wastes generated within the Service Area and develop a program for the continuous assemblage of pertinent data.
- Evaluate the level and adequacy of the current waste management service system.
- Identify alternatives for a new waste management system(s).
- Develop options for privatizing the solid waste system.
- Evaluate alternatives and select and issue a new waste management plan.

Members of the team should include political leaders as well as people with knowledge and experience in governmental affairs, public works program management, solid waste management, public health, environmental protection, public finance, urban infrastructure, and social issues. Participants in the planning process also should include stakeholders such as customers, providers, political leaders, etc. In addition, the Planning Team will need assigned staff to perform administrative and production functions. An example list of Planning Team members is provided in Appendix A.

Once members are selected, the first tasks are as follows:

- Identify a leader (chairperson).
- Develop a work plan and timetable.
- Determine subcommittees and assign responsibilities to specific individuals.
- Schedule regular meetings to ensure timely progress towards goals.

It will be the Planning Team's responsibility to set a vision through leadership. The Planning Team as a whole should envision where the Governorate should be with respect to solid waste management in 10 years, 15 years, or more. This vision should guide the Planning Team throughout the process.

In addition, the Planning Team should involve the public by keeping them informed and soliciting input. All of the Planning Team's activities should be open and transparent, and efforts to keep the public informed through open meetings and press releases should be made.

STEP 2:

Review the Legal, Regulatory, and Policy Framework

Please be aware that there may be new laws, regulations, policies, or directives promulgated or published after this manual was prepared. The Planning Team should make sure they are using the latest applicable laws, regulations, and directives.

The planning process must include a consideration of applicable national and local laws and regulations and corresponding administrative policies and directives. Relevant laws include those applying to environmental, administrative, and regulatory areas. Therefore planning should include a review and understanding of applicable legal and regulatory subjects covered by laws and regulations promulgated at the national and local levels such as the following:

- Existing legislation pertaining to the assignment of responsibility for solid waste management.
- Legal and regulatory requirements applying to waste management activities.
- National and Governorate policies on solid waste management.
- Legal and administrative considerations in public-private partnerships.
- Tendering and contracting requirements and procedures.

The Planning Team should become thoroughly familiar with all current applicable laws, regulations, policies, directives, decrees, and ordinances so that compliance of the existing solid waste management system can be assessed, and so that the any new system adopted can be implemented, managed, and operated in compliance with the applicable laws and regulations. It is incumbent upon the Planning Team to make sure they review the most recent applicable laws and regulations.

A summary of current Egyptian laws, regulations, policy, and directives applicable to solid waste management and the privatization process is provided in Appendix B to this chapter.

A summary of current Egyptian laws, regulations, and directives applicable to tendering and contracting for solid waste management services is provided in Appendix A to Chapter 4, Contractor Pre-Qualification.

STEP 3:

ESTABLISH PLANNING FRAMEWORK AND SERVICE GOALS

After forming the Planning Team (Step 1) and completing the Legal and Regulatory Review (Step 2), the Planning Team must next establish the Planning Framework and Service Goals (Step 3). In conducting this step, planners should take into account the following:

- There is no one solution.
- Holding down costs while achieving customer satisfaction drives system design.
- The issue of what to do with displaced public employees must be addressed if a private service provider is selected.
- Private sector service providers will require a fair return on their investment.

Both technical and policy planning are required to ensure the identification and implementation of environmentally sound and cost-effective collection systems that protect public health and the environment, and meet the service expectations of the public.

The policy phase has two parts, one that precedes the technical phase, and one that follows it. In the first part (Step 3), public policies governing the planning scope and process are decided, service goals are established and the legal and organizational decision-making infrastructure is defined. All of this should be reviewed and approved by the appropriate Governorate officials before proceeding with the technical phase (Steps 4 through 7).

After the technical phase is completed, part two of the policy phase (Step 8) consists of preparing the Final Solid Waste Management Plan and review and approval of the plan by Governorate officials.

The first policy phase includes the following three tasks:

- Establish Basic Policies.
- Establish Program and Service Goals.
- Define the Structure for Decision Making.

There are certain fundamental facts that must be taken into account in planning for solid waste management improvements, the most important one being that politics govern almost all solid waste decisions made by government officials.

ESTABLISH BASIC POLICIES

Four basic policy decisions are required when planning for new solid waste management systems or making changes to existing systems:

- Deciding how to comply with national and local laws, regulations, directives, policies, decrees, and ordinances (see Step 2). An example would be requiring all businesses and residents to use the new collection service that will be provided and to establish and enforce stiff penalties for non-compliance. Another example
- Defining the service area to be included in the plan (see Step 4). Examples include choosing to provide the new services in all areas of or Governorate, or deciding to provide the services only in certain urban areas.
- Defining the service recipients (see Step 5 and Chapter 8, Residential

would be to require the new landfill contractor to be in compliance with all applicable laws and regulations and establishing stiff penalties for non-compliance.

and Commercial Waste Collection). Who gets the service? Will it include all residences and businesses, etc? • Identifying options for paying for the system (see Chapter 3, Solid Waste Financial Management).

These policy decisions are political and must be made by the Office of the Governor in conjunction with the Local Popular Council.

ESTABLISH PROGRAM AND SERVICE GOALS

Only after the program and service goals and objectives of the Governorate have been established will an assessment of existing services become meaningful. Establishing the service objectives of the Governorate and/or the expectations of service users provides a benchmark against which to compare the performance and efficiency of existing services. The desired level of service can be stated by means of a vision, with associated goals and objectives.

An example of Program and Service Goals and Objectives is shown in Figure 2.1.

DEFINE THE STRUCTURE FOR DECISION MAKING

If a decision has been made to consider the option of privatizing solid waste management services, close coordination and cooperation between the Office of the Governor and the Local Popular Council is required to move a plan through the public and political approval process and on to implementation. These two branches of government must be in general agreement on the following:

- The private sector is best equipped to provide the selected solid waste management services.
- The Governorate should be relieved of all operational aspects of the selected solid waste management services.
- The Governorate should maintain responsibility for establishing solid waste management policy.
- The Governorate must monitor the private Contractor(s) to optimize compliance with contract terms and performance specifications.
- A balance should be achieved between the cost of service and benefits received for each category of service user.

FIGURE 2.1: EXAMPLE PROGRAM AND SERVICE GOALS AND OBJECTIVES

The Governorate intends to privatize solid, industrial, and construction and demolition waste collection, recycling, and disposal in all areas of the Governorate. Specific objectives are:

- The management of solid waste will be improved throughout the Governorate through more efficient waste collection, specific waste recycling goals, safe and secure waste disposal, and cleaning up accumulated wastes and litter.
- The Governorate will contract with one or more private sector companies for provision of these new solid waste services.
- All solid waste management activities will be conducted in full compliance with national and local solid waste management laws, regulations, directives, decrees, and ordinances.
- Users fees will be assessed and collected. These fees will pay for the total system costs.

Specific goals are:

- Solid and Industrial Waste collection will be provided to all residences and businesses.
- Construction and Demolition Waste collection will be provided at all new construction sites.
- Residents, businesses and construction contractors will be required to use the newly provided collection services.
- A minimum of 20 percent of all wastes collected will be recycled, composted, or otherwise diverted from disposal.
- Disposal of non-diverted wastes will be in a new Sanitary Landfill constructed and operated to minimize environmental and public health and safety impacts.
- Accumulated waste will be removed and sent to the new landfill for disposal.
- Litter baskets will be provided in public areas.
- On-going litter removal and street and public facility cleaning will be provided.
- The user fees that pay for the new system will be equitably distributed with those that generate more wastes paying more of the costs.

Once agreement has been reached on the principals, a formal structure for outlining the roles and responsibilities of the legislative and administrative branches, and the process that will be followed throughout the planning, implementation, and operational phases can be established. Before proceeding to the next steps, the Governor and/or Secretary General and the Local Popular Council(s) should review and approve the Planning Framework, including the Program and Service Goals and Objectives.



STEP 4:

EVALUATE THE EXISTING SOLID WASTE MANAGEMENT SYSTEM

The next step in the planning process is to conduct an evaluation of the existing solid waste management system. If properly conducted, the evaluation will provide the information necessary to assess which components of the current system are satisfactory and which are not, and the information necessary to properly select, plan, and implement a future waste management system(s).

WHAT IS THE SERVICE AREA?

The first step in the evaluation process is the definition of the desired boundaries of the Service Area. The Service Area is the geographical location(s) in which new waste management services are desired. The Service Area may consist of an entire Governorate, or only certain areas within a Governorate. In some cases, it may even be beneficial for two or more Governorates to seek a regional solution and combine resources for the implementation of a new solid waste management system. In such a case, the Service Area may extend into more than one Governorate. In most cases the Service Area will be defined by standard political subdivisions such as an administrative district, municipality, or Governorate.

The Planning Team should have a map prepared that delineates the entire boundary of the Service Area. The Service Area map also should include the boundaries of different land uses within the Service Area. Land use classifications of importance in waste management planning include:

- Residential (high density, medium density, low density).
- Commercial.
- Industrial (light, medium, heavy).
- Governmental.
- Institutional.
- Medical.
- Public facilities (markets, airports, bus and rail stations, parks, etc.).
- Tourist and Antiquities areas.
- Agricultural.
- Open space.

Each of these classifications should be shown on the Service Area map. If available, other relevant information such as income levels, degree of development, etc., also should be documented.

WHAT TYPES AND QUANTITIES OF WASTE ARE PRODUCED IN THE SERVICE AREA?

The next step in the evaluation process is to identify what types and quantities of wastes are being generated in the Service Area. Solid waste typically is comprised of discards generated by residents, commercial businesses, public institutions, construction activities, and industries.

In many other countries, rural or smaller local governments choose regional options. In other words, they join together in seeking provision of solid waste management services. This spreads the costs over more people and can make some services affordable that could not be affordably implemented by one Governorate alone. In Egypt, it may make very good sense for some Delta Governorates without suitable landfill locations to seek a regional landfill agreement with a nearby Governorate with desert areas suitable for landfilling.

The potential sources and types of wastes that can be expected from each source within most potential Service Areas are as follows:

Residential: Food wastes, paper, cardboard, plastics, textiles, leather, yard wastes, wood, glass, metals, ashes, special wastes (e.g., bulky items, consumer electronics, appliances, batteries, oil, tires), and household hazardous wastes.

Industrial/Manufacturing: Housekeeping wastes, packaging, food wastes, construction and fabrication, hazardous wastes, sludges, liquid wastes, ashes, special wastes, and scrap materials.

Commercial: Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, and hazardous wastes.

Medical: Housekeeping wastes, packaging, food wastes, hazardous wastes, infectious wastes, and radiological wastes.

Agricultural: Spoiled food wastes, crop wastes, hazardous wastes (e.g., pesticides), and food processing byproducts.

Construction/Demolition: Wood, steel, concrete, bricks, brush, rocks, dirt, hazardous waste.

Municipal Services: Street sweepings; landscape and tree trimmings; general wastes from parks, beaches, and other recreational areas; and water and wastewater treatment plant sludge wastes.

Municipal Solid Waste (MSW) typically is defined to include residential, commercial, and institutional wastes, as well as wastes with similar characteristics from industrial, municipal, agricultural, and medical facilities. It typically does not include hazardous, infectious, radiological, or liquid wastes and

This manual will focus on the planning, implementation, and operation of new waste systems to manage waste. It does not discuss hazardous, radiological, liquid wastes, or sludges, although management systems for these types of wastes also can be privatized.

sludges, nor does it typically include street sweepings or industrial, agricultural, and construction and demolition wastes.

The quantity of waste produced depends on many factors. Among them are: the level of socioeconomic development; extent of industrialization; climate; amount of recycling; public awareness and concerns; and established cultural values. Generally, larger volumes of waste are produced, when measured on a per-capita basis, in locations having higher levels of economic prosperity and a higher percentage of urban population. Estimates of waste quantities produced within a given area can be made using several different approaches. For planning purposes, the volume or weight of waste can be estimated by using publicly available published information about waste generation for areas having similar physical, cultural, and land use characteristics. However, if formal waste

collection, transfer, and/or disposal facilities are in use, more locally specific information can be gathered and used to make more accurate estimates (i.e., scale data, number and type of waste collection vehicles used, number and type of vehicles disposing waste at the disposal site).

Estimating the quantity of waste produced based upon general service area characteristics requires collecting demographic data about the area. Figure 2.2 lists some of the information that can provide a basis for estimating waste quantities.

WHAT SERVICES ARE CURRENTLY PROVIDED?

The next step in the evaluation process is to determine what waste management services currently are being provided and by whom. Solid waste management services normally include some or all of the following activities:

- Residential waste collection.
- Commercial waste collection.
- Industrial waste collection.
- Construction and demolition waste collection.
- Street sweeping and cleaning.
- Public facility washing and cleaning.
- Waste transfer.
- Waste reduction, recycling, and composting.
- Medical waste collection.
- Medical waste treatment.
- Waste incineration.
- Waste disposal.



FIGURE 2.2: WASTE ESTIMATION BASES

TYPE OF WASTE	SOURCE OF WASTE	WASTE PRODUCTION FACTORS	TYPICAL MEASUREMENTS
Residential	Single and Multi-Family Households	Population, Number of Households, Size of Service Area	Kilograms/Person, Kilograms/Household, Kilograms/Feddan
Commercial	Shops, Restaurants, Coffee Houses, Hotels, Office Buildings	Number of Employees, Number of Customers, Size of Facility	Kilograms/Employee, Kilograms/Customer, Kilograms/Square Meter
Industrial/ Manufacturing	Light and Heavy Manufacturing Plants, Power and Chemical Plants, Refineries, Etc..	Type of Industry, Number of Employees, Size of Plant, Product, Volume of Inputs and Outputs.	Kilograms/Unit of Production, Kilograms/Employee, Kilograms/Square Meter.
Institutional	Prisons, Schools, Parks, Museums.	Number of Prisoners, Number of Students, Number of Visitors.	Kilograms/Prisoner, Kilograms/Student, Kilograms/Visitor.
Medical	Hospitals, Clinics, Pharmacies, Medical Labs, Veterinary Clinics.	Number of Patients, Number of Employees, Number of Customers.	Kilograms/Patient, Kilograms/Bed, Kilograms/Employee.
Agricultural	Farms, Food Processing Facilities.	Farm Size, Type of Crops, Type of Food Processed.	Kilograms/Feddan, Kilograms/Crop-Ton.
Construction/ Demolition	Building Construction Sites, Building Demolition Sites.	Size of Buildings, Type of Construction.	Ton, Tons/Square Meter.
Municipal Services	Street Sweepings, Accumulated Waste, Parks, Public Areas.	Area or Length of Streets, Size of Parks, Size of Public Areas, Number of Users.	Kilograms/Meter, Kilograms/Square Meter.

For each waste management service, there are different standards of service associated with quality, quantity, and customer convenience issues. Service standards usually include criteria for the frequency of the activity, the convenience of the service to the customer, and some overall quality measures such as service reliability and thoroughness. For example, residential collection service may be provided on a daily basis (frequency), with pickup at the door of the residence (convenience) or the service may be provided less frequently (3 days per week), and consist of providing waste containers placed near the buildings, with each household placing the waste in an appropriate container.

Figure 2.3 summarizes some of the common service standards for solid waste management activities and includes examples of some typical standards. Please refer to the appropriate Technical Chapters of this Manual (Chapters 8 through 16) for a complete discussion of service standards.

WHO IS ACTUALLY PROVIDING THE SERVICE?

The most common providers of waste management services are local government organizations, informal private organizations, and formal private sector companies. Local Governments may fulfill their legal obligation to provide services by: using their own equipment or employees; by contracting with private sector companies to provide some or all of the services; by organizing a franchising or concession system; or by using a combination of public and private sector resources. In some instances, services are provided by groups of people informally organized for the specific purpose of collecting and recycling wastes as a means of subsistence.

Identifying who is providing each service can sometimes be difficult and may require considerable public input and participation (see Chapter 7, Public Awareness and Communications). It also may require thorough field investigations and observations to verify

how each service is being provided and who actually is providing the service as opposed to who is claiming to provide the service.

ARE THE EXISTING SERVICES ADEQUATE?

Each part of the total existing waste management service should be evaluated. Some aspect of physical delivery, such as poor technology, inadequate operations and maintenance, etc; may cause existing deficiencies. Deficiencies may also be due to problems with the institutional structure providing the service, for example, inadequate financing or failure to recognize needs. In many cases, providing better service is a matter of overcoming these problems. For example, improved services can come from better management practices that increase worker productivity. Service delivery should be evaluated from the standpoint of the goal of meeting specific desires of users and other factors such as costs and performance efficiencies.

Just because service is being provided doesn't mean it is adequate. Is the Service Area generally clean and free from excessive litter or accumulated waste? Do the customers like the service? Do they find it easy to use? Is the waste disposal site managed to reduce odors, vermin, fires, and other environmental impacts? Is medical waste managed safely? Is there illegal dumping of industrial waste? Figure 2.4 lists some questions that will help gather information to evaluate the adequacy of existing services.



FIGURE 2.3: TYPICAL SERVICE STANDARDS

TYPE OF SERVICE	TYPICAL FREQUENCY MEASURES	TYPICAL SERVICE LEVEL OPTIONS
Residential Waste Collection	Daily, every other day, set days/week	Door -o-Door, Building-to-Building, Waste Pooling Sites
Commercial Waste Collection	Daily, every other day, set days/week	Door -o-Door, Building-to-Building.
Industrial Waste Collection	Daily, every other day, set days/week	On-site pickup, regional collection centers
Medical Waste Collection	Daily, every other day.	Site pickup in containers provided by Medical Waste service provider, delivery by producer to waste treatment facility.
Medical Waste Treatment	Continuous or on collection days	Disinfection, sterilization
Waste Disposal	Daily, hours may be limited.	Acceptance of some or all wastes from service area.
Street Sweeping and Cleaning	Daily, set days per week.	Mechanical, manual, all streets, primary & secondary streets, litter baskets
Public Facility Washing and Cleaning	Weekly, Monthly, Bi-Monthly	Mechanical pressure washing, hand washing.

FIGURE 2.4: SERVICE ADEQUACY

TYPE OF SERVICE	FREQUENCY	SERVICE LEVEL	COMMENTS
Residential Waste Collection	Is the frequency adequate to avoid excessive accumulation of waste at the source?	Is the service convenient to the customer?	Does the service result in positive results, i.e. clean buildings, streets, and neighborhoods? Is the service reliable?
Commercial Waste Collection	Is the frequency adequate?	Is the service convenient to the customer?	Does the service result in positive results, i.e. clean buildings, streets, and neighborhoods?
Industrial Waste Collection	Is the frequency adequate to avoid undesirable waste accumulation?	Is the service convenient to the customer?	Does the service result in desirable results, i.e. clean buildings, streets, and neighborhoods?
Medical Waste Collection	Is the frequency adequate to prevent potential health hazards and avoid storage problems?	Is the waste generator provided with proper containers?	Are all wastes properly disposed and containerized at the source? Does the system prevent improper access to infectious wastes?
Waste Disposal	Is the disposal facility open for acceptance of waste during appropriate hours?	Does the waste disposal facility have adequate storage capacity? Can the facility accept all wastes on a daily basis? Are the landfill roads maintained well? Is the waiting time for waste tipping reasonable?	Does the facility meet current acceptable design standards? Is the facility operated properly? Is the facility environmentally acceptable?
Street Sweeping and Cleaning	Is the frequency such that the streets are clean an acceptable amount of time?	Are quality standards monitored and enforced?	Is the cleaning method effective and efficient?
Public Facility Washing and Cleaning	Do public facilities appear neat and clean most of the time?	Are most or all public facilities washed and cleaned?	Should other structures and/or facilities be included in the washing and cleaning program?

HOW DOES THE PLANNING TEAM PERFORM THE EVALUATION?

To perform the evaluation of the existing solid waste management system the Planning Team will need to collect a significant amount of information. A methodology for collecting this information is outlined below.

1. Meet with the existing waste service providers. Planning Team representatives should meet with all existing waste service provider(s), whether governmental, contracted private, Zabaleen, or other. Interviews should be conducted to:

- Ascertain service levels (see Figure 2.4).
- Identify waste types collected, recycled, and/or disposed.
- Obtain data on quantities of wastes handled by the service provider.
- Identify waste types observed at the generators, but not handled by the existing waste service providers.

Where available, the Planning Team should obtain copies of any records maintained by the service provider(s) on waste types or quantities collected and/or disposed.

2. Compile lists of industrial, medical, institutional, and major public business facilities in the Service Area. Planning Team representatives should review all available information on types and locations of these facilities within the Service Area. Examples of these facilities might be:

- Industrial: factories, foundries, smelters.
- Medical: hospitals, clinics, medical laboratories, veterinary clinics.
- Institutional: universities, schools, government offices, prisons.
- Major Public Facilities: airports, rail and bus stations, markets, parks.
- Major Businesses: Hotels, restaurants, food stores, office complexes.

3. Conduct visits to the identified industrial, medical, institutional, and major public and business facilities to interview responsible personnel and observe waste collection and disposal practices. Planning Team representatives should understand what types and quantities of wastes are being produced at these types of facilities in the Service Area. Where available, the Planning Team also should obtain copies of any records maintained by these waste generators on waste types or quantities generated and disposed.

4. Conduct field visits to observe waste service provider collection practices. Planning team representatives should follow and observe waste collection crews to assess the accuracy of the information provided by the waste generators and service provider(s) and to gain familiarity with existing collection practices.

5. Conduct site visits to waste disposal sites. Planning team representatives should visit and observe disposal activities at the existing disposal site(s) to assess the accuracy of the information provided by the waste generators and service provider(s) and to gain familiarity with existing disposal practices.

6. Visit all areas of the Service Area. Planning Team representatives should confirm the land-use information gathered earlier and assess levels of uncollected wastes, litter, accumulated wastes and other indicators of inadequate service by sub-area or neighborhood (see Figure 2.4).

7. Obtain customer opinion. The Planning Team should organize residential and commercial customer focus groups to obtain customer input about existing services and to identify desired standards of service. Customer surveys also should be conducted to obtain opinions and input concerning the quality of the existing services and the standards desired for future services.

Typically, customers express opinions and are concerned about the following issues:

- Waste collection frequency.
- Service quality, reliability, and convenience.
- Impacts (negative) of accumulated garbage in the streets including: odors, insects, rodents, smoke, and disease.
- Lowered quality of life.
- Lack of practical waste disposal alternatives.
- Inequity between costs and benefits.

WHAT IS THE DESIRED FINAL OUTPUT OF THE EVALUATION?

The desired final output of the evaluation includes:

1. A map showing the total Service Area including the general location of sub-areas of waste generators having similar waste production characteristics as described by general land use types (industrial, commercial, open space, etc.) within the Service Area.

2. A tabular summary of the following:

- Estimated type and quantity of waste produced within each waste management planning sub-area by major category of waste generator.
- Estimated type and quantity of waste collected, recycled, and disposed by existing waste service providers in the Service Area.
- Estimated type and quantity of waste generated but not collected or otherwise managed by the existing solid waste service providers.
- Results of the customer survey on the existing solid waste management system.

3. A qualitative assessment by the Planning Team on overall adequacy of the existing solid waste management system based on the following: a tabular

summary of unmanaged waste; customer survey results; the Team's personal opinion(s) gained through visits to the sub-areas, the existing service providers, and waste generators, and observations of in-the-field waste management practices.

The information gathered during the evaluation and presented in the qualitative assessment should allow the Planning Team to effectively answer the following questions:

- 1. Is the existing solid waste management system adequate?**
- 2. If not, which waste services need improvement?**

STEP 5:

DEVELOP WASTE MANAGEMENT SERVICE ALTERNATIVES

In Step 5, the Planning Team will develop its preferred alternative for each type of service. Based on the legal review conducted in Step 2, the objectives and goals established in Step 3, and the evaluation of the existing waste system conducted in Step 4, the Planning Team should be able to identify one or more preferred Service Alternatives for a new solid waste management system.

Each preferred Service Alternative should address:

- The desired service types to be provided (i.e., residential and commercial collection, industrial waste collection, medical waste collection, recycling, composting, waste treatment, waste disposal, etc.).
- The desired customer base for each service type (i.e., residential, commercial, institutional, urban areas only, etc.).
- The level of service for each service type (i.e., building-to-building collection, waste container type and size, waste recycling, treatment, or disposal capacity, etc.).
- The service frequency for each service type (i.e., daily residential waste collection, weekly industrial waste collection, 24 hour a day waste disposal, etc.).

The Planning Team then will use a financial model like that presented in Chapter 3, Solid Waste Financial Management, to ascertain the financial feasibility of the preferred Service Alternative. If the model indicates that the initial preferred Service Alternative is too costly and/or otherwise financially unfeasible, then the Team should develop a modified Service Alternative. For each service, several alternatives may be identified for financial evaluation and analysis. As discussed in the introduction to this chapter, this is expected to be an iterative process, and it may require the analysis of several alternatives before the Team is able to select one that is technically, socially, and politically acceptable as well as affordable.

The following figures (2.5 through 2.11) illustrate the basic information needed (decisions to be made) to complete a financial feasibility analysis (see Chapter 3) for each service type. Refer to the illustrative numbers in these tables for examples of how to organize decisions based on information on residential, commercial, industrial, and medical waste collection, waste diversion, waste treatment, waste disposal, street sweeping and cleaning, and public facility cleaning. The reader should refer to Chapters 8 through 16 for more complete discussions of service standards for residential, commercial, and industrial waste collection, construction and demolition waste management, medical waste management, street and public facility cleaning, and waste recycling, composting, transfer, and disposal.



FIGURE 2.5: RESIDENTIAL WASTE COLLECTION

(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Number of Customers (People or Households) The total number of people or households for each type of service desired should be indicated here. This information should be available from the data collected about the Service Area in Step 2.	Type of Service (Door-to-Door, Building-to-Building, Waste Pooling Sites) The type of service desired for each group of customers identified in column 1 should be indicated in this column.	Frequency of Service (Number of Days Per Week) The desired frequency of service must be determined for each group of customers and for each type of service.
15,260 People	Door-to-Door	3 days per week
7,490 Households	Building-to-Building	3 days per week
3,460 Households	Waste Pooling Sites	Pickup as required

FIGURE 2.6: COMMERCIAL WASTE COLLECTION

(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Number of Commercial Establishments	Type of Service (Door-to-Door, Building-to-Building, Waste Pooling Sites)	Frequency of Service (Number of days per week)
546 Commercial Establishments (The number must be coordinated with the residential service requirements.)	Door-to-Door (The type of service must be coordinated with the Residential Service requirements)	3 days per week. (The frequency must be coordinated with the frequency of the Residential Service requirements.)
897 Commercial Establishments	Building-to-Building	3 days per week.

FIGURE 2.7: INDUSTRIAL WASTE COLLECTION

(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Number & Type of Industry (Small, Medium, Large)	Service Container Size (Cubic Meters) List the size of container that will be necessary to service the category listed in column 1.	Frequency of Service (Number of Days per Week) List the estimated frequency of service required based on the quantity of waste, size of container provided, and the type and nature of the industry served.
68 Small Industry	1 Cubic Meter	2 days per week
210 Medium Industry	1 Cubic Meter	4 days per week
60 Large Industry	3 Cubic Meter	2 days per week

FIGURE 2.8: MEDICAL WASTE COLLECTION
(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Type and Number of Generators (Hospital, Clinic, Etc.)	Estimated Waste Quantity	Frequency of Service (Number of Days per Week)
24 Hospitals	4 Tons/Week	Every other day
213 Medical Offices	2.5 Tons/Week	Daily

FIGURE 2.9: WASTE PROCESSING AND DISPOSAL
(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Type of Waste (Residential, Commercial, Industrial, Medical)	Quantity of Waste (Tons per Day)	Method of Waste Treatment and/or Disposal
Residential	450 Tons/Day	Landfill with 20% recycling reduction by weight
Commercial	210 Tons/Day	Landfill
Medical	23 Tons/Day	Incineration then disposal to landfill

FIGURE 2.10: STREET SWEEPING AND CLEANING
(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Type and Quantity of Street (Length of Primary, Secondary, Unpaved)	Type of Service (Manual, Mechanical)	Frequency of Service
260 km Primary Streets	Mechanical	Daily
646 km Secondary Streets	Manual	Daily

FIGURE 2.11: PUBLIC FACILITY WASHING AND CLEANING
(Illustrative numbers, actual numbers will be derived from service area data gathered in Step 3)

Type of Facility	Size/Number	Frequency
Public Parks	2,4 Square Kilometers	Every other day
Bus Stops	49	Daily
Train Stations	6	Daily, 24 hours/day

STEP 6:

DEVELOP PRIVATIZATION OPTIONS

There are many different ways for the private sector to participate in providing solid waste management services. Common types of agreements or relationships that form the basis for many public-private partnerships are as follows:

- Service Contracts.
- Management Contracts.
- Franchises.
- Concessions.
- Open Competition.

Factors that should be considered when choosing a privatization option or combination of options for a particular service include: the allocation of responsibility for asset ownership and capital investment; the assignment of commercial risk; and the current service method including capabilities and quality of service.

Figure 2.12 summarizes some of the important characteristics of different methods of privatization.

FIGURE 2.12: ALLOCATION OF KEY RESPONSIBILITIES UNDER THE MOST COMMON SOLID WASTE MANAGEMENT - PRIVATE SECTOR PARTICIPATION OPTIONS

Option	Asset Ownership	Operation and Management	Capital Investment	Commercial Risk	Typical Duration
Service Contracts	Public and/or Private	Public and/or Private	Public and/or Private	Public	3 to 15 years
Management Contracts	Public	Private and/or Public	Public	Public	3 to 5 years
Franchise	Private	Private	Private	Shared	5 to 15 years
Concession	Public and/or Private	Private	Private	Private	25 to 30 years
Open Competition	Private	Private	Private	Private	Unlimited

SERVICE CONTRACTS

Service Contracts can be used to obtain private sector assistance for performing one or more specific tasks associated with solid waste management or for entire solid waste management systems.

For relatively simple specific tasks with a limited scope such as providing trash vehicle maintenance or repairing waste containers, limited waste collection etc., the Service Contracts are usually short in duration (6 months to 5 years), and are relatively simple to prepare. For more complex and comprehensive services such as complete waste collection and disposal services, the Service Contracts are far more complex and normally are for a longer time period (5 years or more).

The Governorates of Alexandria, Cairo, and Qalyoubiya all are using Service Contracts in their solid waste privatization programs.

Service contracting can result in the public sector gaining access to private sector expertise for technical tasks for which it may lack expertise. Service Contracts can also lead to improvements in efficiency, but they must be carefully managed and monitored.

Sometimes Service Contracts may assign only small amounts of commercial risk and responsibility to the private sector and therefore, little improvement to overall managerial efficiency may result. On the other end of the spectrum, open competition places nearly all responsibility and risk with the private sector, but this approach only works when there is a strong political commitment and substantial regulatory capacity on the part of the responsible public agency.

Drawbacks to Service Contracts that are limited in scope are that they may not result in significant improvements in

overall program services and they cannot eliminate or solve problems such as improperly designed service systems. Limited scope Service Contracts however, can provide a cost-effective way to meet special technical or service needs for a utility that is already well managed and commercially viable.

Utilization of Service Contracts that are comprehensive in scope, such as contracts involving the provision of all or most services associated with solid waste management within an entire Service Area can be a very effective way of securing the services of private sector contractors with solid waste management capabilities. Such contracts can minimize direct government involvement in the provision of the services and may result in significant service improvements, provided the contracts are well written and administered.

MANAGEMENT CONTRACTS

Management Contracts are a type of contract whereby a private sector company assumes responsibility for the management of most or all of the public utility's activities, such as Operations and Maintenance (O&M), billing and collections, and the day-to-day service operations. The duration of a Management Contract is usually 3 to 5 years or more.

There are many different kinds of Management Contracts. The simplest involve paying a private firm a fixed fee for performing managerial tasks, while the more complex ones introduce greater incentives for efficiency by defining performance targets and basing the contractor's payment, at least in part, on the contractor's ability to meet or exceed his targets. Use of a Management Contract can result in improved service with reduced risks to the client (i.e., government). Other benefits can include significant improvements in system operating efficiencies and service; and improved organizational reform of operations. Management Contracts can

also be a good first step towards significant private sector involvement in solid waste management. One of the more significant drawbacks is that the government remains responsible for the financing of all capital investments.

The use of Management Contracts is feasible in a number of situations:

- Where tariffs are not high enough to support a commercial operation, and time is needed to implement a new tariff structure.
- Where the existing regulatory framework needs improvements or changes that would make private sector participation more feasible.
- Where the government is not experienced in the implementation of private sector participation projects in the waste management sector.
- Where there is uncertainty whether support for private sector participation within the government and among stakeholders is sufficient to support long term private sector involvement.
- Where the legal structure to facilitate private sector participation does not exist and needs to be developed.

Management Contracts are therefore most likely to be useful where the main objective is to rapidly enhance a Governorate's waste management technical/managerial capacity and its efficiency in performing specific tasks, or to prepare for greater private involvement in the longer term.



FRANCHISES

A governmental agency responsible for waste management services may grant a single private sector company the right to provide services within a defined service area. In this case, the private firm contractually agrees to provide specific services in exchange for the right to charge customers directly for those services. The government retains some control over the tariffs charged by the contractor to the customers and also provides quality oversight of the contractor's work. The contractor is selected through a competitive bidding process.

CONCESSIONS

In a typical waste management concession agreement, the government would grant a contractor the right to use a government resource such as solid waste. The contractor might use this waste to recover

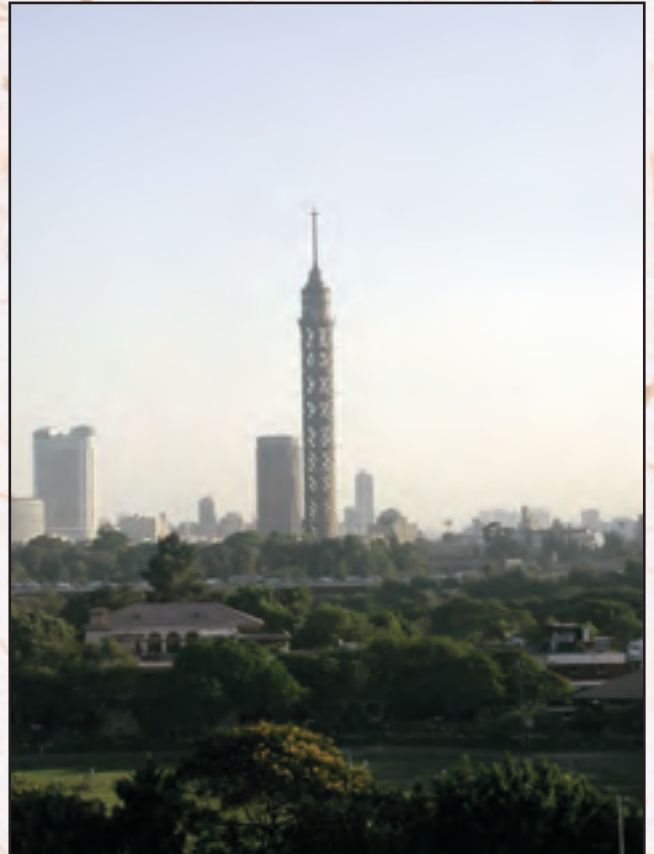
paper, plastic, metal, glass, or for energy generation. This type of agreement is usually associated with services that involve significant investment in facilities such as engineered landfills, recycling centers, etc. The contractor is granted exclusive rights in exchange for use of a resource and/or direct payment by the government for the service rendered. Concessions may be based upon a long-term agreement to build, own, operate, and transfer (BOOT) a specific facility. This method of securing private sector services is most commonly used for landfill, recycling, and energy production projects.

OPEN COMPETITION

Open Competition permits each household, commercial establishment, industry, or medical facility to hire a contractor of its choice for waste collection services. Each customer then pays the contractor for the services

provided. Contracting for waste management services in this way usually results in higher costs than when waste collection services are provided by the government. This is primarily due to economies of scale, because having multiple firms providing service in the same area is not as efficient as when only one company operates in the same area.

Providing for waste management services by Open Competition is only effective when there are strong regulatory controls related to waste disposal that are strictly enforced and where people can afford to pay for the service. It generally is not an appropriate method in low-income areas or areas where citizens litter indiscriminately and disposal of trash and litter in public areas is a problem. However, it can be a very effective choice for managing industrial waste collection, even in low-income areas or countries.



STEP 7:

SELECT THE DESIRED SERVICE DELIVERY PLAN

This step allows an analysis of the collected data to determine which Solid Waste Management Plan to pursue. The final end product of this step and the solid waste management process should be a Service Delivery Plan that describes the desired Service Alternative and the desired method(s) for delivery of the waste management services. For example, the desired Service Alternative may be for total privatization of all solid waste management services under one service contract with one Contractor. It also may be for continued provision of all waste services by the Governorate. Or it may be for some mix of Governorate and Contractor service provision. Regardless, it is important that the Service Delivery Plan clearly identify:

- All services to be provided, including service level and frequency.
- Where the services are to be provided.
- Who will provide each service.
- How the services will be paid for (see Chapter 3).
- How the Governorate plans to implement the Service Delivery Plan.

In evaluating alternative management plans, it is important to notice whether existing unsatisfactory services and poor quality are due to poor service delivery systems or other factors. There are three basic alternatives to consider:

- Continue on the current basis.
- Improve the existing service delivery system.
- Change the method of providing the service.

STAY WITH THE CURRENT PLAN

If it has been determined in earlier steps of the analysis that a particular waste management service is being provided in an entirely satisfactory manner, and it also appears to be efficiently provided, then unless there are other overriding considerations, it would be logical to continue providing the services in the same way. This could be the case whether the service was being provided by the government or by a private sector contractor. This would, however, be somewhat unusual and generally not be the case for most waste management services in most areas. However, there may be other reasons for not making significant changes to the existing service delivery system. These reasons might include the following factors:

- The existence of long-term contracts.

- Unacceptable or undesirable impacts on existing employees.
- Lack of in-house expertise needed to initiate significant changes.
- Lack of legislative or regulatory authority.
- Lack of public acceptance.
- Lack of financial capability.

IMPROVE THE EXISTING SYSTEM

Step 2 provided information about stakeholder dissatisfaction with current operations. Listing current problems and issues can help keep a clear focus on what is wrong with the system, if anything. It also is important to think about how people with sufficient skills and equipment might theoretically do the job. Any discovered inefficiencies should be studied to consider whether or not simple changes to the existing system could result in significant changes in performance.

A source of information is front-line employees who deal regularly with day-to-day performance issues. They are the people who best understand the problems and who will be the most affected by changes to the existing system. For this reason, employees can be very important in providing constructive input to the planning process, particularly if they believe what they will say will receive due consideration. For example, if certain procedures or policies are preventing employees from efficiently completing their jobs, employees may be readily willing to share this information with managers who are trying to improve the system.

CHANGE THE SYSTEM

In situations where the quality of service provided by the government is less than satisfactory, experience has shown that

private sector (business) approaches to the management of public services can substantially improve the quality of service and/or reduce costs. Some of the reasons for private sector efficiency are:

- Economic incentives, which are a normal part of private sector operations, can stimulate and motivate management and employees to a higher level of performance than might be found in similar public organizations.
- Government solid waste management services often are not as efficient as should be as in many cases; there may be too many workers on the payroll or too many supervisors and managers and not enough workers.
- In a government setting, fewer incentives exist to encourage high-performance productivity.

STEP 8: PREPARE THE SOLID WASTE MANAGEMENT PLAN



Some criteria that should be considered when deciding whether to change the degree or nature of participation of the private sector in solid waste management services follow:

- Does the government have or can it procure the ability to write performance specifications that clearly define the work?
- Can the government adequately define performance measures that can be monitored and enforced?
- Can the government provide efficient service?
- Are there any economies of scale?
- Does government have the capability to monitor performance and the will to enforce contractual or license agreements, or both, with the private sector?
- Is the private sector adequately

developed to ensure competition in the procurement process?

- What are the social implications?
- Will a change result in an overall improvement in the quality of life?
- Will a change result in a net job creation or loss?

NEXT STEPS

The next chapter provides guidelines and directions for assessing the cost of existing services, estimating future costs based upon new and different service standards, and estimating customer charges based upon the services provided. The results of the financial analysis will provide a solid foundation for selecting the desired type and level of services to be provided within the planning area in the future.

In Step 8, the findings from completion of the previous steps in this chapter should be compiled and summarized in a Preliminary Solid Waste Management Plan to solicit input from all stakeholders and government officials. The process of developing this document will illuminate any fundamental systemic problems.

The document should summarize the findings from the planning process, identify obstacles and constraints to desired service performance levels, recognize opportunities, and list one or more desired Service Alternatives and Delivery Options.

The Preliminary Solid Waste Management Plan must be subjected to the “political” process to allow the input of political, social, and institutional considerations. Findings and identification of system improvements may be technically sound, but not be well understood or received by special interest groups and/or government officials. However, if the Plan was prepared in accordance with the previously approved goals and objectives developed in Step 3, then political approval should be much simpler.

There are three objectives of preparing the Preliminary Solid Waste Management Plan:

- Obtain the “buy-in” of governmental officials.
- Obtain indirect feedback from service users (through elected representatives) or direct feedback through public meetings.
- Produce a Final Solid Waste Management Plan that presents a “politically acceptable”, and therefore achievable solid waste management system.

Once final approval of the preliminary plan is received, the Planning Team should produce the final Solid Waste Management Plan, which then will be used as the basis for implementing the new system.

APPENDICES

APPENDIX A: EXAMPLE LIST OF PLANNING TEAM MEMBERS

CHAIRPERSON:
MEETING COORDINATOR/SECRETARY:

Specialty	Name and Title/Position
1. Public Administration	
2. Accounting/Finance	
3. Technical - Solid Waste Management	
4. Technical - Environmental	
5. Legal	
6. Public Health	
7. Government Official	
8. Government Official	
9. Stakeholder -Customer, Private	
10. Stakeholder - Customer, Business	
11. Other	
12. Other	
12. Other	
12. Other	

APPENDIX B: SUMMARY OF APPLICABLE CURRENT EGYPTIAN LAWS, REGULATIONS, POLICY, AND DIRECTIVES

As Egyptian Governorates and local governments are entering into contracts with private companies to provide solid waste management and cleaning services, one condition for success is adequate enforcement of existing solid waste management laws and regulations. To do this, Governorates will need to develop, approve, and initiate enforcement strategies for the existing solid waste management laws and regulations.

The purpose of this appendix is to review and analyze existing solid waste management laws and regulations. The laws and regulations that comprise the subject of this appendix are those dealing specifically with the management of municipal solid waste¹ and construction and demolition debris². Non-hazardous industrial waste has chemical and physical characteristics similar to those of municipal solid waste, so it is included in this appendix as a component of municipal solid waste; however, hazardous waste and infectious medical waste are not included in this appendix.

This report is divided into two sections.

Section 1: Review of Existing Laws and Regulations.

Section 2: Analysis of Existing Laws and Regulations.

Section 1: REVIEW OF EXISTING LAWS AND REGULATIONS

The principal law and regulations governing solid waste management in Egypt are Law Number 38 of 1967 on General Public Cleaning and its executive regulations (issued by Minister of Housing Decree Number 134 of 1968). The Environment Law (Law Number 4 of 1994) and its executive regulations (issued by Prime Minister Decree Number 338 of 1995) also contain some provisions governing general solid waste management.

Several other laws address solid waste in specific situations, but do not have general provisions governing solid waste management. For instance, Law Number 48 of 1982 on the Protection of the Nile and Its Canals prohibits dumping solid waste in the Nile River and its canals, and Law Number 140 of 1956 on the Occupation of Public Ways and Law Number 84 of 1968 Concerning Public Ways prohibit dumping solid waste on roads or in public squares.

1.1 Law Number 38 of 1967, General Public Cleaning

Law Number 38 of 1967 on General Public Cleaning (Law 38/1967) is the primary law governing the management of solid waste in Egypt. It was enacted in 1967 and replaced all previous laws dealing with solid waste including Law 97 of 1956 on Organization of Garbage Collection and Transfer, Law 159 of 1953 on Cleaning Public Squares, Streets and Highways, and Law 151 of 1947 on Cleaning Fences and Unused Areas. Since 1967, it has been amended four times³.

In 1968, the Minister of Housing issued the executive regulations for the law (MoH 134/1968). Although the law and its executive regulations deal primarily with solid waste, they also address wastewater and fencing of open areas.

¹ Municipal solid waste is solid waste from individuals, households, residences, commercial establishments, governmental buildings, and institutions (schools, universities, mosques, churches, museums, etc.) and other wastes with similar chemical and physical characteristics.

² Construction and demolition debris is solid waste resulting from the construction, remodeling, repair, and demolition of structures, roads, sidewalks, and utilities.

³ Law 31/1976, Law 209/1980, Law 177/1981, Law 129/1982.

1.1.1 Solid Waste Management Provisions

Law 38 of 1967 and its executive regulations prohibit placing solid waste anywhere except in an area designated by the local council.⁴ This prohibition applies to treatment and disposal of solid waste as well as to temporary placement in an undesignated container.⁵ Articles 5 and 6. Article 1 of MoH 134/1968 defines solid waste as solid garbage or residuals generated by individuals, residential units, non-residential buildings such as governmental and institutional buildings, companies, factories, commercial establishments, animal pens, butcheries, markets, public areas, parks, and means of transportation.

The law and its regulations require the local government authority responsible for general cleaning or a contractor licensed by the local authority⁶ to collect, transfer, and dispose of solid waste in accordance with the specifications in the executive regulations as well as those of the local council.⁷ The specifications in the executive regulations are shown in Figure 1. If a local authority contracts solid waste services, the contractor is responsible for the actions of the garbage collectors it hires.³

Law 38/1967 authorizes the local council to impose a fee on building inhabitants of not more than two percent of their rent to fund solid waste management.⁹ This fee, along with all fines¹⁰ collected for violation of Law 38/1967, must be placed in a general cleaning fund established by the local council. The fund must be used for general cleaning. These funds can be augmented by funds from the general budget to insure adequate funding for solid waste management.

Law 38/1967 also requires owners of open land to remove accumulated waste and keep the land clean.¹¹ The executive regulations authorize the local authority to remove solid waste from open land at the owner's expense, if the owner does not do so within 15 days after notification.¹²

1.1.2 Local Enforcement Authority

Article 11 of Law 38/1967 authorizes implementation of the law by competent employees in local government, as identified by decree from the Minister of Justice. In 1976, the Minister of Justice issued Decree Number 3137 (MoJ 3137/1976), which identified the following local government employees as having authority to enforce Law 38/1967.

- Governorate housing administrators.
- Governorate health department administrators.
- Governorate health affairs representatives working in environmental protection.
- Governorate or local unit general manager for urban environmental protection.
- Engineering Division administrators for town and district councils.
- Municipal organization administrators and engineers.
- Environmental protection monitors in local units.
- Physicians at health offices and units in towns, districts, and village units.
- Heads of village units in rural areas.
- Technical personnel supervising cleaning services in local units.
- Cleaning and draining monitors and supervisors.

Article 1 in Presidential Decree Number 272 of 1982 (PD 272/1982) transferred jurisdiction for general cleaning from the Ministry of Housing to local administrative units.

⁴ Law 38/1967 Article 1; MoH 134/1968 Articles 5 and 16.

⁵ Law 38/1967 Article 2; MoH 134/1968 Articles 5 and 6.

⁶ Law 38/1967 Article 6; MoH 134/1968 Articles 5, 9, and 14.

⁷ Law 38/1967 Articles 3 and 5; MoH 134/1968 Articles 5, 6, 7, and 9.

⁸ MoH 134/1968 Article 8.

⁹ Law 38/1967 Article 8.

¹⁰ Law 38/1967 Article 9.

¹¹ Law 38/1967 Article 2.

¹² MoH 134/1968 Articles 22 and 23.

Table 1. Solid Waste Management Specifications in the Executive Regulations for Law 38 of 1967 (MoH 134/1968)

Component	Article	Specification
Storage containers	6	<ul style="list-style-type: none"> Suitable capacity for the waste generated. Hard metal or similar material and void of holes. Tight cover and two handles. The local authority may provide detailed specifications or model names. Containers must be kept inside the building they serve except at the time of garbage collection. They must be kept clean and washed after each use.
Collection containers	12	<ul style="list-style-type: none"> Containers used by garbage collectors must be: <ol style="list-style-type: none"> Made of resistible material. Void of holes to prevent spillage. Kept clean. The local authority can make specifications that are more detailed.
Collection vehicles	14	<ul style="list-style-type: none"> Adequate capacity. Good working condition and void of holes. Tight cover. Lined with galvanized tin or zinc or other suitable material as determined by the local authority. Parked, washed and sanitized at designated garages. Not used for any other purpose
Construction and demolition debris collection vehicles	15	<ul style="list-style-type: none"> Good working condition. Tight cover to prevent spillage.
Spillage	16	<ul style="list-style-type: none"> Contractor must remove any spillage during transfer.
Protective clothing for garbage collectors	10	<ul style="list-style-type: none"> Garbage collectors must be provided clothing suitable to provide health protection, as specified by the local council.
Collection frequency	11	<ul style="list-style-type: none"> The local council shall determine the period and time for waste collection.
Garbage sorting	13	<ul style="list-style-type: none"> Only allowed in designated areas. Prohibited in vehicles.
Land disposal	17	<ul style="list-style-type: none"> Sufficient size and located where there is easy traffic flow. 250 meters downwind from the nearest residential unit. Fenced, with a gate suitable for truck access. Adequate sanitary facilities for workers. Suitable water source for dust control and fire fighting. Garbage heaped in piles with slopes of 1:2 or put in ditches, depressions, or abandoned canals. Compacted, covered with 15 cm of earth, and sprayed with water.
Composting	17	<ul style="list-style-type: none"> Suitable place provided for sorting waste and removing glass, tin, rubber, rocks, and other non-organic waste. Prohibit use as animal food unless meeting conditions set by the competent local council.
Incineration	17	<ul style="list-style-type: none"> Complete burn. No air pollution. Prohibit use as fuel in hearths unless meeting conditions set by the competent local council.

1.1.1 Penalties

Article 9 of Law 38/1967 contains the penalties for violation of the law. It establishes a fine of up to LE 100 for violating the terms of the law, although fines can be higher if authorized by other laws. If wastes are deposited in an undesignated area,¹³ Article 9 authorizes local authorities to require the violating party to remove the wastes or to pay for the costs of their removal. A violator can resolve a claim made against him by the local authorities by removing the violation and paying an LE 10 fine within 24 hours of notification. If the violator is a place of business and the violation poses a threat to public health, the local authorities can ask a judge to seize the violator's business until the violation is removed.¹⁴ The judge can terminate the seizure in response to a protest by the violator even before the case is settled. In all cases, the seizure shall be terminated upon removal of the violation.

1.2 Law Number 4 of 1994, Environment Law

Law Number 4 of 1994 on the Environment (Law 4/1994) is the over-riding environmental law for Egypt. Article 3 of the Presidential Decree issuing Law 4/1994 repeals all provisions of other laws running counter to the provisions of Law 4/1994. One article in Law 4/1994 addresses general solid waste management¹⁵ and another addresses the management of construction and demolition debris.¹⁶ The provisions of these two articles are discussed below. In addition, two articles deal with solid waste management on ships and offshore platforms,¹⁷ and five articles address hazardous waste management.¹⁸ This appendix does not address the provisions for ships, offshore platforms, and hazardous waste management, as they are not generally a component of municipal solid waste management programs.

Prime Minister Decree Number 338 of 1995 issued the executive regulations for Law 4/1994 (PM 338/1995). The executive regulations contain two articles addressing general solid waste management¹⁹ and one article addressing the management of construction and demolition debris.²⁰ The provisions of these articles are discussed below.

Law 4/1994 and its executive regulations also contain provisions requiring environmental impact assessment of establishments,²¹ control of air and noise emissions from establishments,²² and worker safety.²³ These provisions apply to solid waste management facilities such as recycling and composting plants, medical waste treatment facilities, and sanitary landfills. They are not addressed in this appendix because of their general nature, but Governorates will have to ensure that they are addressed during the development and implementation of the solid waste management privatization program.

1.1.2 Solid Waste Management Provisions

Similar to Law 38/1967, Law 4/1994 and its executive regulations prohibit disposing or treating garbage and solid waste anywhere except in an area designated by the local authorities.²⁴ However, this prohibition goes beyond that in Law 38/1967 in that it prohibits burning of solid waste. The law states that the executive regulations shall contain specifications for solid waste treatment and disposal sites, and the executive regulations clarify that the prohibition is absolute for open burning, but allows incineration provided it meets the specifications in the regulations (Table 2).²⁵ Neither Law 4/1994 nor its executive regulations define garbage or solid waste.

¹³ A violation of Article 1 of Law 38/1967.

¹⁴ Law 38/1967 Article 9.

¹⁵ Law 4/1994 Article 37.

¹⁶ Law 4/1994 Article 39.

¹⁷ Law 4/1994 Articles 67 and 68.

¹⁸ Law 4/1994 Articles 29 through 33.

¹⁹ PM 338/1995 Articles 38 and 39.

²⁰ PM 338/1995 Article 41.

²¹ Law 4/1994 Articles 19 through 23; PM 338/1995 Articles 10 through 19.

²² Law 4/1994 Articles 34 through 35; PM 338/1995 Articles 34 through 35.

²³ Law 4/1994 Articles 43 and 44; PM 338/1995 Articles 45 and 46.

²⁴ Law 4/1994 Article 37; PM 338/1995 Article 38.

²⁵ PM 338/1995 Article 38. Article 38 also provides for a three-year transition period during which non-medical solid waste could be burned under special conditions, but the transition period expired in 1998, so those provisions are no longer relevant.

Article 39 of the executive regulations for Law 4/1994 promulgates some specifications for solid waste containers and collection vehicles. These specifications are shown in Table 2.

Both the law and its executive regulations address the management and disposal of construction and demolition debris. They require all persons involved in exploration, excavation, construction and demolition to take necessary actions, as specified in the executive regulations, to safely store, transport, and dispose of wastes generated by those activities.²⁶ Article 41. Article 41 of the executive regulations contains the specifications and requires local authorities to incorporate them into permits for exploration, excavation, construction and demolition (Table 2).

1.2.2 Local Enforcement Authority

Local authorities are empowered to enforce Law 4/1994 and its executive regulations. The articles in Law 4/1994 and its executive regulations that address general solid waste management identify local or municipal authorities as responsible for:

- Designating sites for treatment, burning and disposal of solid waste (in agreement with EEAA).²⁷
- Granting permission (in conjunction with EEAA) for transporting infectious medical waste to hospitals for incineration.²⁸
- Implementing the specifications for solid waste containers and collection vehicles.²⁹

Incorporating construction and demolition debris requirements into permits for exploration, excavation, construction and demolition and designating sites for disposal of those wastes.³⁰

²⁶ Law 4/1994, Article 39; PM 338/1995 Article 41.

²⁷ Law 4/1994 Article 37; PM 338/1995 Article 38.

²⁸ PM 338/1995 Article 38.

²⁹ PM 338/1995 Article 39.

³⁰ PM 338/1995 Article 41.

Table 2. Solid Waste Management Specifications in the Executive Regulations for Law 4 of 1994 (PM 338/1995)

Component	Article	Specification
Solid waste incinerator	38	<ul style="list-style-type: none"> • Located at a site agreed to by local authorities and EEAA. • Located outside of residential or industrial areas. • Located downwind and at least 1,500 meters from populated areas. • On a site with sufficient space to store garbage prior to incineration. • Capacity to burn the garbage within 24 hours of arriving at the site. • Equipped with air pollution control devices to meet air emissions standards in Annex 6 of the regulations.
Infectious medical waste incinerator	38	<ul style="list-style-type: none"> • Located where the waste is generated or at a centrally located hospital. • Especially designed for medical waste incineration. • Large enough to incinerate all medical waste generated without causing a storage problem at the medical facility. • Equipped with air pollution control devices to meet air emissions standards in Annex 6 of the regulations.
Infectious medical waste transport	38	<ul style="list-style-type: none"> • Transported in sealed containers. • The sealed containers must be incinerated with the waste.
Storage containers	39	<ul style="list-style-type: none"> • Suitable capacity for the waste generated between regularly scheduled collections. • Tight cover. • Kept clean.
Collection vehicles	39	Kept clean.
Construction and demolition debris management	41	<ul style="list-style-type: none"> • Stored on-site in a manner that does not obstruct movement of people or traffic or cause a safety concern. • Covered while stored to prevent air pollution, if liable to be dispersed by the wind. • Transported in vehicles licensed for such transport and meeting the following requirements: <ul style="list-style-type: none"> • Fitted with a special box or airtight cover to prevent spillage or dispersal during transportation. • Provided with special loading and unloading equipment. • Fitted with working lights and all required safety equipment. • Well-maintained to meet all safety requirements. • Disposal sites must be: <ul style="list-style-type: none"> • At least 1.5 kilometers from residential areas. • Below grade of the surrounding area. • Leveled at or below grade after disposal.

Article 104 of Law 4/1994 states that inspectors of administrative authorities who have the capacity of judicial officers in matters relating to the environment shall be authorized to enforce the provisions of Law 4/1994 and its executive regulations. In 1996 the Minister of Justice issued Decree Number 1353 (MoJ 1353/1996) authorizing several local government authorities to enforce Law 4/1994, including governor's deputies, town mayors, district and village heads, and the managers of environment offices in the Governorates.

Article 103 of Law 4/1994 gives every citizen and organization concerned with the protection of the environment the right to report violations of the law to competent authorities. Article 65 of the executive regulations reiterates this right and goes on to require the Ministry of Interior to form a police force specialized in environmental protection to enforce the provisions of the law. The Ministry of Interior, however, has not yet established the environmental police force.

1.2.3 PENALTIES

Articles 86 and 87 of Law 4/1994 contain the penalties for violation of the general solid waste management provisions of the law. The penalty for disposing, treating, or burning solid waste in an undesignated area is a fine from LE 1,000 to LE 20,000, and in the case of recidivism, the penalty is the fine plus imprisonment.³¹ These penalties are higher than those in Law 38/1967. Article 3 of the Presidential Decree promulgating Law 4/1994 authorizes local authorities to impose these higher penalties.³² Article 9 of Law 38/1967 also states that higher fines can be imposed if authorized by other laws.

The penalty for violating the provisions for management of construction and demolition debris is a fine of from LE 500 to LE 1,000.³³ The court is given authority to suspend a violator's license and, in the case of recidivism, to revoke the license.

The penalties for violation of Law 4/1994 can be more severe if so prescribed by other laws.³⁴ In the case of solid waste management, however, the fines in Law 4/1994 are higher than in any other laws.

1.3 Law Number 48 of 1982, Protection of the Nile and its Canals

Law Number 48 of 1982 (Law 48/1982) is the law for protection of the Nile and its canals. The executive regulations for Law 48/1982 were issued by Minister of Irrigation Decree Number 8 of 1983 (Mol 8/1983). The law and its executive regulations primarily focus on wastewater discharges to the Nile and its canals, but also contain articles that include solid waste.

1.3.1 Solid Waste Management Provisions

Both Law 48/1982 and its executive regulations prohibit the disposal of solid waste in the Nile and its canals without permission of the Ministry of Irrigation.³⁵ The executive regulations extend this prohibition to the temporary or permanent placement of solid wastes on the banks of the Nile and its canals.³⁶ The executive regulations define solid wastes as solid materials (including refuse, garbage, sweeping materials, dry rubbish, fractured stones, construction and demolition debris, and workshop scraps) generated by individuals, residential units, non-residential units (governmental, commercial, industrial, tourist), and means of transportation.³⁷

³¹ Law 4/1994 Article 87.

³² That article states that the provisions of Law 4 shall take precedence over all other laws dealing with the same violations.

³³ Law 4/1994 Article 86.

³⁴ Law 4/1994 Article 101.

³⁵ Law 48/1982 Article 2; Mol 8/1983 Article 2. The Ministry of Irrigation was subsequently renamed to the Ministry of Public Works and Water Resources and is currently named the Ministry of Water Resources and Irrigation.

³⁶ Mol 8/1983 Article 2.

³⁷ Mol 8/1983 Article 1, Definition 12.

1.3.2 Local Enforcement Authority

Article 19 of Law 48/1982 authorizes Irrigation Engineers in the Ministry of Irrigation to enforce the law within their jurisdictions. Article 13 assigns the Water Police of the Ministry of Interior with the responsibility to assist the implementing authorities in identifying violations of Law 48/1982, informing violators, and removing the causes of violations..

Article 89 of Law 4/1994 increases the penalties for violation of Article 2 of Law 48/1982 (see next section). This increase in penalties is incorporated directly into Law 4/1994 rather than as an amendment to Law 48/1982. As a result, those authorized to enforce Law 4/1994 can also enforce Article 2 of Law 48/1982.³⁸ In the case of local authorities, this includes governor's deputies, town mayors, district and village heads, and the managers of environment offices in the governorates.

1.3.3 PENALTIES

Article 16 of Law 48/1982 establishes a penalty for violating Article 2 of up to one year in prison and a fine from LE 500 to LE 2,000. In the case of recidivism, the penalty can be doubled. In addition to paying the penalty, the violator must remove or rectify the violation within a period determined by the Ministry of Irrigation. If the violator fails to remove the violation within the allotted time, the Ministry is authorized to remove it at the violator's expense.

Article 89 in Law 4/1994, reduces the lower limit of the fine for violation of Article 2 of Law 48/1982 to LE 200, increases the upper limit of the fine to LE 20,000, provides for imprisonment only in cases of recidivism, and does not provide for doubling fines in the cases of recidivism. The article contains the same language as in Article 16 of Law 48/1982 authorizing the Ministry of Water Resources and Irrigation to require removal or rectification of the violation or to do so itself, at the expense of the violator. The article does not state that it is an amendment to the penalties in Law 48/1982, but Article 3 of the Presidential Decree issuing Law 4/1994 repeals all provisions of other laws running counter to the provisions of Law 4/1994. Therefore, the penalties for Article 2 of Law 48/1982, stipulated in Article 89 of Law 4/1994, are the penalties that are currently in effect.

1.4 Laws Concerning Public Ways

Two laws concerning public ways (highways, streets, and squares) contain restrictions on solid waste management and disposal – Law Number 140 of 1956, Occupation of Public Ways (Law 140/1956) and Law Number 84 of 1968, Concerning Public Ways (Law 84/1968). Law Number 106 of 1976 on Building Construction (Law 106/1976), as amended by Law Number 101 of 1996 (Law 101/1996), does not contain specifications for the management of construction wastes, but it does contain a funding mechanism that can be used by local authorities to enforce Laws 140/1956 and 84/1968.

1.4.1 Solid Waste Management Provisions

Law 84/1968 prohibits placing solid wastes on public ways.³⁹ The law applies to all of the highways and main streets, but does not apply to other roads inside the boundaries of towns that have local councils, as do all of the towns to be served by the solid waste privatization program.

Law 140/1956 and its executive regulations, issued by Minister of Municipal and Rural Affairs Decree Number 395 of 1956 (MoMRA 395/1956), deal primarily with granting licenses for occupation of public ways within the borders of areas with local councils. One of the activities that require a license is placement of construction and demolition debris in a public way.⁴⁰ The executive regulations for the law contain specifications for the management of construction and demolition debris, which allow placing the debris on the street only in manner that does not obstruct the flow of traffic.⁴¹ The law also allows the competent administrative authority to charge a fee for occupation of public ways, and those fees are set in the executive regulations.⁴²

³⁸ EEAA. Guide Document for Solid Waste Systems in Egypt. Solid Waste General Department, EEAA, Ministry of Environmental Affairs, Cairo, Egypt. April 2001, page 75.

³⁹ Law 84/1968 Article 13.

⁴⁰ Law 140/1956 Article 2.

⁴¹ MoMRA 395/1956 Article 11.

⁴² Law 140/1956 Article 7; MoMRA 395/1956 Articles 1 and 25.

1.4.2 Local Enforcement Authority

Article 21 of Law 140/1956 authorizes the Minister of Municipal and Rural Affairs and the Minister of Justice to enforce the law. Article 16 of that law authorizes the Minister of Municipal and Rural Affairs to specify the competent authorities for enforcement of the law's provisions. Article 1 in PD 272/1982 transferred jurisdiction for enforcement of Law 140/1956 and Law 84/1968 to local administrative units.

1.4.3 Penalties

Violation of Law 140/1956 and its executive regulations carries a fine of from LE 100 to LE 300, plus the violator is required to pay five times the occupation fee, two times the cost of court fees, and the cost to remove the debris. If the violator does not remove the debris, the local authority is authorized to do so at the expense of the violator. In addition, the governor can suspend the violator's construction and demolition license until the violation is removed, if he determines that the violation poses a clear danger to public health and safety. If the violator refuses to pay the penalties, he can be imprisoned for up to one month and his fines can be increased to from LE 300 to LE 1,000.

Violation of Law 84/1968 carries a penalty of imprisonment for up to one month and a fine of not more than LE 100.⁴³ The law also authorizes the implementing authority to remove the obstruction at the violator's expense plus an administrative fee of 15 percent of the cost of removal.⁴⁴

Law 106/1976 is the general law concerning construction activities. Article 6 of the law requires individuals who receive a construction permit to pay a non-refundable fee of one percent of the value of the construction to the governorate to cover expenses incurred by the governorate during or after construction. Article 4 of the executive regulations for the law, issued by Minister of Housing and Public Utilities Decree 268 of 1996 (MoHPU 268/1996), allows the governorate to keep the revenues collected from the one percent fee in a special fund and to use that fund to finance several activities including removal of construction and demolition debris left by violators of the law. Thus, Law 106/1976 and its executive regulations do not have specifications for the management of construction and demolition debris, but they do create a financial mechanism for allowing enforcement of the provisions of Laws 140/1956 and 84/1968.

1.5 Other Laws and Regulations

1.5.1 Law Number 137 of 1981, Labor Law

Law Number 137 of 1981 (Law 137/1981) requires employers to inform employees of the dangers associated with handling solid waste and requires employers to provide safety equipment and training to employees handling solid waste. This law is enforced the Ministry of Manpower and Emigration.

1.5.2 Law Number 155 of 1999, Traffic Law

Article 72 of the Traffic Law (Law 155/1999) states that any vehicle driver who throws from his or her vehicle garbage, waste, or any other item that pollutes the public ways shall be fined not less than LE 50 or more than LE 500. In addition, the driver's license of the violator can be suspended for 30 to 60 days. Enforcement authority for this law lies with the Traffic Police in the Ministry of Interior.

1.5.3 General Egyptian Penal Law

In addition to the specific laws referenced above, the General Egyptian Penal Law contains two articles prohibiting littering. Article 377 provides for a fine up to LE 100 for throwing wastes on public roads. Article 378 provides for a fine up to LE 50 for throwing wastes on vehicles, buildings, gardens, animal pens, and fenced land, or throwing objects into Nile or its canals that will obstruct navigation. Enforcement authority for the Penal Law lies with the Ministry of Justice and the Egyptian Courts.

⁴³ Law 84/1968 Article 13

⁴⁴ Law 84/1968 Article 15.

Section 2: ANALYSIS OF EXISTING LAWS AND REGULATIONS

The information presented in the previous section of this appendix identifies a significant number of laws governing solid waste management. Current laws and regulations address most of the critical components of solid waste management including collection, transportation, treatment, and disposal.

Local authorities are authorized to enforce the principal solid waste management laws and regulations:

- Law 38/1967.
- The solid waste components of Law 4/1994.
- The littering and obstruction provisions of Law 140/1956 and Law 84/1968.
- Article 2 of Law 48/1982.⁴⁵

This authority comes via Article 89 of Law 4/1994 that, among other things, establishes a fine for violating Article 2 of Law 48/1982. Article 2 of Law 48/1982 includes the prohibition of dumping solid waste in the Nile and its canals.

Their authority either is established in the individual laws or has been subsequently granted via other laws or decrees. The authority to enforce other laws prohibiting littering, including Article 72 of the Traffic Law (Law 155/1999) and Articles 377 and 378 of the General Egyptian Penal Law, is not granted to local authorities. However, this does not prohibit local authorities enforcing against disposal of waste on public ways or littering as these actions also violate Law 38/1967 and Law 4/1994, which prohibit dumping solid waste in undesignated areas.⁴⁶ Indeed, enforcement authority for Law 38/1967 and Law 4/1994 is sufficient for management of solid waste, in that violations of the solid waste components of the other relevant laws (Law 140/1956, Law 84/1968, and Law 48/1982) are also violations of the “undesignated dumping” provisions of Law 38/1967 and Law 4/1994. For effective implementation of the solid waste management privatization program, the Governorates will need to be able to enforce two general categories of regulations.

- Those governing the behavior of the contractors regarding collection, transport, treatment, and disposal of solid waste.
- Those governing the behavior of citizens regarding management of solid waste.

This section of the appendix looks at the legal requirements in these two areas. Legal Requirements for Collection and Disposal Contractors

The Governorates should not rely upon legal enforcement to address the behavior of contractors regarding collection, transport, treatment, and disposal of solid waste under the solid waste privatization program. The contracts prescribe that behavior, which in all cases meet the legal requirements and in many cases exceed them. Governorates should enforce these contractual obligations via contract management, specifically through the monitoring, payment, and penalty provisions of the contracts. Table 3 shows the solid waste management laws and regulations that the Governorates should enforce via contract management.

⁴⁵ This authority comes via Article 89 of Law 4/1994 that, among other things, establishes a fine for violating Article 2 of Law 48/1982. Article 2 of Law 48/1982 includes the prohibition of dumping solid waste in the Nile and its canals.

⁴⁶ Law 38/1967 Articles 1, 2, and 3; MoH 134/1968 Articles 5 and 16; Law 4/1994 Article 37; PM 338/1995 Article 38.

Table 3. Legal Requirements to be Enforced Via Contract Management)

Requirement	Applicable Laws/Regulations
Provide and maintain containers that meet container specifications	Law 38/1967: Articles 2, 3 MoH 134/1968: Article 5, 6, 7, 12 PM 338/1995: Article 39
Provide and maintain collection vehicles that meet vehicle specifications	Law 38/1967: Article 3 MoH 134/1968: Article 7, 12, 14 PM 338/1995: Article 39
Collect waste at frequency specified	Law 38/1967: Article 3 MoH 134/1968: Article 7, 11 PM 338/1995: Article 39
Provide workers with protective clothing	Law 38/1967: Article 3 MoH 134/1968: Article 7, 10 Law 137/1981
Prohibit sorting in the street by collectors	Law 38/1967: Article 3 MoH 134/1968: Article 7, 13
No spillage on public ways	MoH 134/1968: Articles 12, 14, 16 Law 84/1968: Article 13
Dispose of collected waste in designated location	Law 38/1967: Articles 1, 3 MoH 134/1968: Article 5, 7, 16 Law 4/1994: Article 37 PM 338/1995: Article 38 Law 48/1982: Article 2 Mol 8/1983: Article 2 Law 84/1968: Article 13
Build and operate treatment and disposal facilities in accordance with specifications	Law 38/1967: Article 3 MoH 134/1968: Article 7, 17 Law 4/1994: Articles 19-23, 34, 35, 37 PM 338/1995: Articles 10-19, 34, 35, 38

1.6 Legal Requirements for Citizen Behavior

Success of the privatization program will depend upon citizen compliance with solid waste management laws and regulations as well as contractor compliance. For the program to result in a cleaner Egypt, citizen behavior regarding the handling of solid waste must be controlled. There are four illegal activities in particular that the Governorates will have to monitor and prosecute:

- Littering.
- Dumping solid waste in undesignated areas.
- Burning garbage.
- Setting garbage out in undesignated containers.

These behaviors can be largely controlled through effective public communications programs, but control may also require legal enforcement. Table 4 identifies the legal requirements governing these four activities. Governorates have legal authority to enforce compliance with laws and regulations governing all four of the activities identified in Table 4. The fines for violating these laws and regulations can be as high as LE 20,000, as they can be enforced under Law 4/1994. Burning garbage can only be enforced under Law 4/1994, which has a fine from LE 1,000 to LE 20,000. The other activities could also be enforced under Laws 38/1967 and Law 84/1968, which have maximum fines of LE 100, but even if the lower fine were imposed, it would be sufficient to deter most citizens from violating the law.

Table 4. Legal Requirements for Citizen Behavior Regarding Municipal Solid Waste

Activity	Law or Regulation	Prohibition
Littering	Law 38/1967: Articles 1, 2, 3 MoH 134/1968: Article 5	Put garbage, dirt, and residuals in undesignated location
	Law 4/1994: Article 37 PM 338/1995: Article 38	Dump garbage and solid waste in undesignated location
	Law 48/1982: Article 2 MoH 8/1983: Article 2	Dump solid waste in or on the banks of the Nile and its canals without a permit
	Law 84/1968: Article 13	Place wastes in public ways
	Law 155/1999: Article 72	Throw waste from vehicle onto public ways
Dumping garbage in an undesignated area	Law 38/1967: Articles 1, 2, 3 MoH 134/1968: Articles 5, 16	Put garbage, dirt, and residuals in undesignated location
	Law 4/1994: Article 37 PM 338/1995: Article 38	Dump garbage and solid waste in undesignated location
	Law 48/1982: Article 2 MoH 8/1983: Article 2	Dump solid waste in or on the banks of the Nile and its canals without a permit
	Law 84/1968: Article 13	Place wastes in public ways
Burning garbage	Law 4/1994: Article 37 PM 338/1995: Article 38	Burn garbage and solid waste
Placing garbage in undesignated containers	Law 38/1967: Articles 2, 3 MoH 134/1968: Articles 5, 6	Set garbage out in containers not in compliance with specifications
	PM 338/1995: Article 39	Placing garbage in containers without tight covers

The Governorates will need to change the behavior of private operations as well as the behavior of individuals for successful implementation of the privatization program. In particular, Governorates will have to be able to effectively enforce the laws and regulations governing three activities:

- Scavenging.
- Unlicensed collection of solid waste.
- Management of construction and demolition activities.

The contracts between the Governorates and the contractors give the contractors exclusive rights to collect and dispose of solid waste in the area served, as well as ownership of the solid waste, once it has been placed in containers for collection. To safeguard that right, Governorates will have to be able to enforce laws against scavenging and unlicensed collection. Several articles in Law 38/1967 and its executive regulations (MoH 134/1968) prohibit these activities (Table 5). As these laws and regulations are only present in Law 38/1967 and its executive regulations, the penalty for violation is limited to a fine of no more than LE 100. However, the law does have provisions for seizing vehicles used in the violation.⁴⁷

Table 5. Legal Requirements for the Behavior of Private Operations Regarding Municipal Solid Waste

Activity	Law or Regulation	Prohibition
Scavenging	Law 38/1967: Articles 3, 6 MoH 134/1968: Article 13	Sort garbage on the street
Collecting garbage without a license	Law 38/1967: Articles 3, 6 MoH 134/1968: Articles 5, 7, 9, 14	Collect garbage without a license

Management of construction and demolition debris is not included in the privatization program. Proper handling of these waste materials will be dependent upon enforcement of existing laws and regulations. Four laws give Governorates the authority to regulate the management of construction and demolition debris (Table 6), and a fifth law, Law 106/1976, gives Governorates a mechanism to ensure compliance, at least for all legally sanctioned construction and demolition activities.

Table 6. Legal Requirements for the Behavior of Private Operations Regarding Construction and Demolition Debris

Activity	Law or Regulation	Prohibition
Accumulation of construction and demolition debris	PM 338/1995: Article 41	Obstruct the movement of traffic and people
	Law 84/1968: Article 13	Place wastes in public ways
	Law 140/1956: Article 2 MoMRA 395/1956: Article 11	Place construction and demolition debris in public ways
Illegal transport of construction and demolition debris	Law 38/1967: Article 3 MoH 134/1968: Article 15	Haul construction debris in a vehicle not in compliance with specifications
	Law 4/1994: Article 39 PM 338/1995: Article 41	Haul construction debris in a vehicle not licensed to do so by local authority.

⁴⁷ Law 38/1967 Article 9.

Solid Waste Technical Assistance

